

## **REMARKS**

Reexamination and reconsideration of this application is requested. Claims 1, 2, 7, 8, 13, and 18 have been amended. Claim 14 has been cancelled. After this Response With Amendment, Claims 1-13, and 15-21 remain pending in this application. No new matter was added.

### **Rejection Under 35 U.S.C. 102 (Eshghi)**

The Examiner rejected Claims 1-2, 5-8, and 11-12 under 35 U.S.C. 102(b) as being anticipated by Eshghi U.S. Patent No. 5, 893,083.

Eshghi is directed towards a system and method for the management of services provided by a computer system. Eshghi teaches that an inferencing engine carries out inferencing operations on a declarative model of a service. The inferencing engine uses facts about the system stored in a fact base. A resident goal store contains declarative definitions of goals which concern availability of services and which it is desirable for the system to continue to satisfy. The service model includes definitions of events which can occur in the system and may affect availability of services, and definitions of actions which can be taken to modify the configuration of the system. Eshghi teaches that when an occurrence of an event defined in the service model is reported to the apparatus, the event definition is used to guide analysis of the event report and appropriate updating of the fact base.

Goals which are linked to the updated facts are then examined to assess whether the goals are still satisfied. If a goal is no longer satisfied the service model is searched for actions which can re-configure the system to enable the goal to be re-satisfied. If a goal involves information about an entity in a part of the system managed by a second, different management apparatus, the second apparatus can be requested to establish a sub-goal concerning the status of that entity. Thereafter, the second apparatus takes appropriate action, autonomously, to keep the sub-goal satisfied, and reports back only if it is unable to satisfy the sub-goal.

With respect to Claim 1, the Examiner on page 2 of the present Office Action states that Eshghi teaches:

wherein the at least one policy definition includes at least one conditional relationship specification (Eshghi: Column 9, lines 56-60),

and wherein the at least one policy definition programmatically specifies relationships between resources in an automatic computing system (Eshghi: Column 5, lines 39-45) and

defines at least one desired end state therefor (Eshghi: Column 2, lines 53-55)

However, column 9, lines 56-60 of Eshghi merely states:

As described above, each service model 24 contains statements relating to the entity or entities relevant to that model and these statements will generally be used to form a number of conditional relationships between those entities specifying, for example, that a service entity is available if certain conditions are met.

Column 5, lines 39-45 of Eshghi merely states:

Each service model 24 is a declarative model of the service concerned and specifies the requirements needing to be met for the service to be available. These requirements or rules are set out in terms of the system's physical and logical entities associated with the service (such as printers and modems, and integers, files and operating modes), and the relationships between these entities.

The presently claimed invention as recited for claim 1 (and similarly claim 7), on the other hand, has been amended to more clearly recite:

receiving at least one policy definition defined by a user, wherein the at least one policy definition includes at least one conditional relationship specification, and wherein the at least one policy definition programmatically specifies relationships between at least two resources in a set of resources in an automatic computing system and defines at least one desired end state therefor, and wherein the at least one conditional relationship specification indicates a relationship between at least two resources based on a state associated with each of the at least two resources, and wherein

the at least one conditional relationship specification comprises at least one conditional statement, and wherein the at least one policy definition programmatically specifies relationships by using states associated with the at least two resources and indicating a decision sequence that is to be followed to reach the at least one desired end state based on the at least one conditional relationship specification;

Support for these amendments can be found in the Specification as originally filed at, for example, page 27, line 16 to page 30, line 15;. No new matter has been added.

Eshghi does not teach or suggest “wherein the at least one conditional relationship specification indicates a relationship between at least two resources based on a state associated with each of the at least two resources, and wherein the at least one conditional relationship specification comprises at least one conditional statement”. The conditional relationships of Eshghi merely indicate when a service entity is available. This is not the same as “wherein the at least one conditional relationship specification indicates a relationship between at least two resources based on a state associated with each of the at least two resources, and wherein the at least one conditional relationship specification comprises at least one conditional statement”. Accordingly, the presently claimed invention distinguishes over Eshghi for at least these reasons.

Also, nowhere does Eshghi teach “wherein the at least one policy definition programmatically specifies relationships between at least two resources in a set of resources in an autonomic computing system and defines at least one desired end state therefor, ...wherein the at least one policy definition programmatically specifies relationships by using states associated with the at least two resources and indicating a decision sequence that is to be followed to reach the at least one desired end state based on the at least one conditional relationship specification.

In fact, Eshghi teaches away from using programmatic constructs such as conditional statements. For example, Eshghi teaches at col. 5, lines 55-67 that:

As used herein, the term "declarative model" refers to an abstract description of a service, the meaning of the model being independent of any form of processing to which the model may be subject; the structure of the

model, and the manner in which it is used, are not based on notions of sequence, iteration or choice (in contrast to what is typically the case with imperative models), and instead the model employs logical operators (such as AND, OR, NOT) and recursion as appropriate. Concepts of sequence, iteration and choice may well be represented in the model as part of the modelling of the service concerned but this does not affect the declarative nature of the model.

As can be seen, Eshghi explicitly teaches away from using any programming constructs such as conditional statements within the declarative model. Therefore, Eshghi cannot teach or suggest “wherein the at least one policy definition programmatically specifies relationships by using states associated with the at least two resources and indicating a decision sequence that is to be followed to reach the at least one desired end state based on the at least one conditional relationship specification”. Accordingly, the presently claimed invention distinguishes over Eshghi for at least these reasons as well.

Claim 1 and claim 7 have also been amended to more clearly recite:

harvesting implicit relationships among the set of resources via self-discovery, wherein the set of implicit relationships at least indicate one or more of a set of resource dependencies for at least one resource in the set of resources and location requirements for at least one resource in the set of resources, and wherein the set of implicit relationships are discovered automatically without the user explicitly specifying the implicit relationships;

Support for this amendment can be found in the Specification as originally filed at, for example, page 7, lines 7-20. No new matter was added.

Eshghi is completely silent on this claim element and does not even suggest “harvesting implicit relationships among the set of resources via self-discovery...”. Accordingly, the presently claimed invention distinguishes over Eshghi for at least these reasons as well.

Claim 7 has been further amended to more clearly recite:

wherein the policy definition further comprises a set of resource relationships received that only specify relationships associated with a top-most level set of resources in the set of resources, wherein the availability of one or more of the top-most level set of resources is dependent on the availability of one or more resources of a lower level set of resources in a reverse hierarchy of dependencies from top-most level to lowest level set of resources;

Support for this amendment can be found in the Specification as originally filed at, for example, page 17, lines 2-21. No new matter was added.

Eshghi merely teaches a declarative model that specifies the requirements needing to be met for a service to be available. Nowhere does Eshghi teach or suggest “wherein the policy definition further comprises a set of resource relationships received that only specify relationships associated with a top-most level set of resources in the set of resources, wherein the availability of one or more of the top-most level set of resources is dependent on the availability of one or more resources of a lower level set of resources in a reverse hierarchy of dependencies from top-most level to lowest level set of resources”. Accordingly, the presently claimed invention distinguishes over Eshghi for at least these reasons as well.

With respect to claim 2, the Examiner states in the Response To Arguments Section that:

Applicant argues that the sub-goal is met, the system attempts to satisfy the main goal. However, it is noted that the instant claims do not require that the system does not attempt to reach the desired state after the acceptable state is reached. As long as the method, as a whole, is performed, it is irrelevant if the reference discloses additional steps, as the instant claims utilize the term “comprising” as a traditional phrase.

The Applicants respectfully point out that the claims 2 and 8 explicitly recited “placing the autonomic computing system in the acceptable sub-state as a substitution for the desired end-state”. As can be seen, the desired end state is **substituted** by the acceptable sub-state. Therefore, the desired end state is no longer available. To further

clarify this point, the Applicants have amended claims 2 and 8 to more clearly recite:

[...]

determining that the acceptable sub-state can be reached using at least one of priority ratings, conditional relationship specifications, and alternative relationship specifications; and

placing the autonomic computing system in the acceptable sub-state as a substitution for the desired end-state, wherein the acceptable sub-state becomes a new end-state in response to the substitution.

Support for this amendment can be found in the Specification as originally filed at, for example, page 29, line 16 to page 30, line 5. No new matter was added.

As can be seen the desired end state is replaced by the sub-state, i.e., the desired end state is no longer available or attempted to be reached.

However, Eshghi teaches with respect to a sub-goal at col. 3, lines 16-20 that:

A determination is made in a first management entity in the first group that satisfaction of the goal requires a sub-goal to be satisfied. That satisfaction of the sub-goal involves system entities in a second group different from the first group.

In other words, the sub-goal needs to be satisfied so that the main goal can be satisfied. In other words, once the sub-goal is completed, the system of Eshghi continues to try and satisfy the main goal.

In addition, the presently claimed invention states that the acceptable sub-state is a sub-state of the autonomic computing system and is defined by the policy definition that defines the desired end state. Eshghi cannot teach this since Eshghi teaches that a sub-goal is managed by a completely separate manager than the manager concerned with the main goal. The sub-goal in Eshghi is not a substitute for the main goal, but a stepping stone for achieving the main goal. The acceptable sub-state of the presently claimed invention, on the other hand, is a substitute for and replaces the desired end-state. Accordingly, the presently claimed invention distinguishes over Eshghi for at least these reasons as well.

The Applicants respectfully remind the Examiner that a proper rejection under 35 U.S.C. § 102(b) requires that a single reference teach (i.e., identically describe) each and every element of the rejected claims, which Eshghi clearly does not do.<sup>1</sup> Accordingly, the present invention distinguishes over Eshghi for at least this reason as well.

Therefore, in view of the foregoing amendments and remarks, the Applicants believe that the rejection of Claims 1-2 and 7-8 under 35 U.S.C. § 102(b) has been overcome. Claims 5-6 and 11-12 depend from Claims 2 and 8, respectively. Since dependent claims include all of the limitations of their independent claim, claims 5-6 and 11-12, are believed to also recite in allowable form. Accordingly, the Applicants request that the Examiner withdraw the rejection and allow Claims 1-2, 5-8, and 11-12.

**Rejections Under 35 U.S.C. 103 (Eshghi in view of Sankaranarayan)**

The Examiner rejected Claims 3, 4, 9, and 10 under 35 U.S.C. 103(a) as being unpatentable over Eshghi in view of Sankaranarayan U.S. Pre-Grant Publication No. 2005/0033846.

Sankaranarayan is directed towards a resource management architecture for managing resources in a computer system. The system of Sankaranarayan includes a resource manager and multiple resource providers that support one or more resource consumers such as a system component or application. Each provider is associated with a resource and acts as the manager for the resource when interfacing with the resource manager. The resource manager arbitrates access to the resources provided by the resource providers on behalf of the consumers. A policy manager sets various policies that are used by the resource manager to allocate resources. One policy is a priority-based policy that distinguishes among which applications and/or users have priority over others to use the resources.

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<sup>1</sup> See MPEP §2131 (Emphasis Added) “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ... claim.”

Sankaranarayan also teaches that a resource consumer creates an "activity" at the resource manager and builds one or more "configurations" that describe various sets of preferred resources required to perform the activity. Each resource consumer can specify one or more configurations for each activity. If multiple configurations are specified, the resource consumer can rank them according to preference. This allows the resource consumers to be dynamically changed from one configuration to another as operating conditions change.

Claims 3, 4, 9, and 10 depend from claims 2 and 8, respectively. Applicants have already discussed above how the independent claims 2 and 8 distinguish from Eshgi. These observations are also applicable here and show that these claims also are distinguishable from the teachings of Sankaranarayan. Since the teachings of Eshghi and Sankaranarayan either taken individually and/or in any combination with each other do not teach or suggest the subject matter of independent claims 2 and 8, claims 3, 4, 9, and 10 also recite in allowable form as well. Accordingly, the Applicants request that the Examiner withdraw the rejection and allow Claims 3, 4, 9, and 10.

**Rejections Under 35 U.S.C. 103 (Sankaranarayan in view of Eshghi)**

The Examiner rejected Claims 13-21 under 35 U.S.C. 103(a) as being unpatentable over Eshghi in view of Sankaranarayan U.S. Pre-Grant Publication No. 2005/0033846.

Claim 14 has been cancelled, without prejudice or disclaimer, thereby rendering the rejection of claim 14 moot.

Claim 13 recites similar to claim 1 and claim 18 recites similar to claim 2, which have already been discussed above. Therefore, the remarks and arguments made above with respect to claims 1 and 2 are applicable here as well, and will not be repeated.



Any policy taught in Sankaranarayan that is defined by a user is related to conflict resolution. See for example, paragraph [0083] of Sankaranarayan. Also, Sankaranarayan merely teaches counting the number of resources that are the same. Additionally, Sankaranarayan only teaches that notifications are sent to policies (which are policies for allocating resources such as conflict resolution policies). Accordingly, the teachings of Sankaranarayan do not teach or suggest the presently claimed invention.

Therefore, because Sankaranarayan and Eshghi either taken individually and/or in any combination with each other do not teach or suggest:

An autonomic resource manager for an autonomic computing system, the autonomic resource manager comprising:

memory for storing at least one policy definition defined by a user, wherein the at least one policy definition includes at least one conditional relationship specification, and wherein the at least one policy definition programmatically specifies relationships between at least two resources in a set of resources in an autonomic computing system and defines at least one desired end state therefor, and wherein the at least one conditional relationship specification indicates a relationship between at least two resources based on a state associated with each of the at least two resources, and wherein the at least one conditional relationship specification comprises at least one conditional statement, wherein the at least one policy definition programmatically specifies relationships by using states associated with the at least two resources and indicating a decision sequence that is to be followed to reach the at least one desired end state based on the at least one conditional relationship specification;

a relationship harvester for harvesting implicit relationships among the set of resources via self-discovery, wherein the set of implicit relationships at least indicate one or more of a set of resource dependencies for at least one resource in the set of resources and location requirements for at least one resource in the set of resources, and wherein the set of implicit relationships are discovered automatically without the user explicitly specifying the implicit relationships;

a resource monitor, communicatively coupled with each resource in the autonomic computing system, for monitoring, and communicating data with, each resource in the autonomic computing system;

an equivalency definer, communicatively coupled with each resource in the autonomic computing system, and with the memory, for defining at least one equivalency representing at least one set of equivalent resources in the autonomic computing system, and storing the at least one equivalency in the memory, wherein the equivalency defines the at least one set of equivalent resources that can be substituted for one another in accordance with the at least one policy definition that includes at least one conditional relationship specification to arrive at the desired end state;

a policy generator, communicatively coupled with the resource monitor and the memory, for providing in the memory a representation of a system-wide graph of available actions and at least one of: conditional relationship specifications and alternative relationship specifications, corresponding with resources in the autonomic computing system; and

an automation engine, communicatively coupled with the resource monitor, with at least one resource in the autonomic computing system, and with the memory, for providing available actions as defined by the at least one policy definition to the at least one resource in the autonomic computing system in order for the autonomic computing system to establish and maintain a desired end state.

or

An autonomic computing system, comprising:  
distributed resources; and

an autonomic resource manager, communicatively coupled with the distributed resources, for receiving at least one policy definition defined by a user, wherein the at least one policy definition includes at least one conditional relationship specification, and wherein the at least one policy definition programmatically specifies relationships between resources in an autonomic computing system and defines at least one acceptable sub-state and at least one desired end state for the autonomic computing system, determining that the desired end state for the autonomic computing system cannot be reached, determining that acceptable sub-state can be reached using at least one of priority ratings, conditional relationship specifications, and alternative relationship specifications, and placing the autonomic computing system in acceptable sub-state as a substitution for the desired end-state, wherein the acceptable sub-state becomes a new end-state in response to the substitution.

Claims 13 and 18 recite in allowable form. Claims 15-17 and 19-21 depend from claims 13 and 18, respectively. Since dependent claims recite the limitations of their independent claims, claims 15-17 and 19-21 also recite in allowable form as well. Accordingly, the Applicants request that the Examiner withdraw the rejection and allow Claims 13, and 15-21.

### **Conclusion**

The foregoing is submitted as a full and complete response to the Official Action mailed October 1, 2008, and it is suggested that claims 1-13 and 15-21 are in condition for allowance. Reconsideration of the rejections is requested. Allowance of claims 1-13 and 15-21 is earnestly solicited.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicants have argued herein that such amendment was made to distinguish over a particular reference or combination of references.

Applicants acknowledge the continuing duty of candor and good faith to disclose information known to be material to the examination of this application. In accordance with 37 CFR § 1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment are limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this Response by the Applicants and attorneys.

**If the Examiner believes that there are any informalities that can be corrected by Examiner's amendment, or that in any way it would help expedite the prosecution of the patent application, a telephone call to the undersigned at (561) 989-9811 is respectfully solicited.**

The present application, after entry of this Response With Amendment, comprises twenty (20) claims, including six (6) independent claims. Applicants have previously paid for twenty-one (21) claims including six (6) independent claims. Applicants, therefore, believe that an additional fee for claims amendment is currently not due.

The Commissioner is hereby authorized to charge any fees that may be required or credit any overpayment to Deposit Account No. **50-1556**.

In view of the preceding discussion, it is submitted that the claims are in condition for allowance. Reconsideration and re-examination is requested.

Respectfully submitted,

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